

COTTON FIBER MATURITY AND TECHNOLOGICAL INDICATIONS OF ELITE COTTON SEEDS GROWN UNDER DIFFERENT CONDITIONS

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Abstract. The article presents data on the yield and genetic variability of cotton varieties grown using elite seeds under film and film drip irrigation technology.

Keywords: cotton, elite, seeds, variety, option, quality sign, quantity sign, variability, drip irrigation.

Introduction. The fiber obtained from cotton raw material is the main valuable economic characteristic of the cotton plant. All cotton-growing countries pay attention to the fiber quality indicators of cotton. Agrotechnical measures and several external and internal factors are responsible for fiber quality indicators. In particular, sowing seeds under different conditions and irrigation methods have a special place in the formation of technological quality indicators of fiber [2]. The introduction of modern, resource-saving and water-saving technologies for the production of high-yielding and high-quality fiber from cotton varieties grown on elite farms is reflected in the Resolution of the President of the Republic of Uzbekistan No. assignments were given on the use of effective irrigation methods and resource-saving technologies in cultivation. [1]

Research methodology. Based on this, a number of scientists of our Republic [3], [4], [5] have carried out many works on the influence of irrigation methods and planting scheme on the technological indicators of fiber. However, there is very little research on how these methods affect seed quality and yield of cotton cultivars. In our research, we also studied the effect of sowing seeds under different conditions on seed quality indicators using the technology of drip irrigation under film, as well as the maturity level of fiber and other technological indicators (Table 1).

Table 1

Fiber indicators of varieties planted in seed farms														
#	Varieties	Planting scheme	Technological indicators											
			2021				2022				difference from control, +/-			
			Ripeness of fiber	Fiber length, mm	Microneuri	Tensile strength of fiber, gk/tex	Ripeness of fiber	Fiber length, mm	Microneuri	Tensile strength of fiber, gk/tex	Ripeness of fiber, %	Fiber length, mm	Microneuri	Tensile strength of fiber, gk/tex
1	2	3	4	5	6	7	8	9	10	11	12	13		
Control														
1	Andijon-35	90x12x1	3,0	33,5	4,8	27,6	3,1	33,4	4,8	27,1				
2	Sulton	80x15x1	3,1	33,2	4,5	26,3	3,0	33,4	4,5	26,8				
3	Andijon-37	60x20x1	3,1	34,6	4,5	27,2	2,9	34,6	4,5	27,2				
4	Andijon-36	60x12x1	3,2	34,5	4,4	28,3	3,1	34,2	4,5	28,2				
A research option														
1	Andijon-35	90x20x1	3,7	34,0	4,8	27,5	3,9	33,9	4,7	27,6	19,7	0,50	4,7	0,2
2	Sulton	90x12x1	3,6	33,8	4,5	26,8	3,7	33,9	4,5	27	16,4	0,55	4,5	0,35
3	Andijon-37	60x12x1	3,6	34,9	4,5	27,5	3,8	34,9	4,5	27,5	18,9	0,3	4,5	0,3
4	Andijon-36	76x18x1	4,1	34,6	4,4	28,3	4,0	34,6	4,4	28,4	22,2	0,25	4,4	0,1

Of course, it should be emphasized that one of the main factors contributing to the improvement of the efficiency and effectiveness of the work carried out in the seed production system is that the soils of the farms where seeds are grown have a specific composition and mechanical structure.

No matter how different the soil and climate conditions are, it is necessary to pay attention to the completeness of the raw cotton fibers grown in that environment as much as possible.

Ripeness of fiber, in fact, it is among its quality indicators. It is based on how much cellulose layers are formed in the fiber walls. The degree of ripeness of the fiber depends primarily on the soil and climate conditions, as well as on agrotechnical measures and in some cases on the type of cotton.

The ratio of the width of the fiber ribbon to the width of its channels represents the ripeness of the fiber.

There is a special measuring unit (scale) that determines the ripeness of the fiber. This unit ranges from 0-5, with a difference in the middle of 0.5. The unit of measurement is 0.0 for dead fibers and 5.0 for mature fibers. The indicators of good and moderately ripe fibers are in the range of 2-2.5-3 (Fig. 1).

In addition, the degree of ripeness of cotton fiber can be seen with high accuracy using a special device called Polaroid P-2.

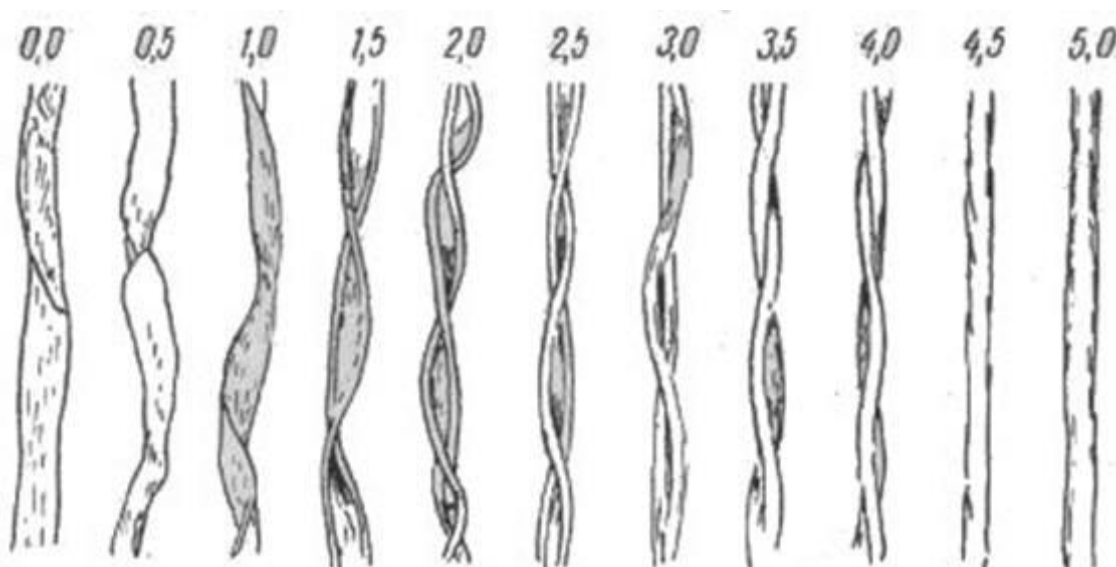


Figure 1. A scale comparing the ripeness of cotton fiber.

Discussion. In the study, seeds were collected from variants grown in different planting schemes and different irrigation methods, and the cotton fiber maturity level of the samples was compared between the research variants and the control cultivars as follows differences were seen: the indicators of the research options, summarizing the results of scientific research conducted in 2021-2022, among them, according to the indicator of cotton fiber maturity, the indicator of the cotton variety "Andijan-36" grown with the help of drip irrigation technology in the planting scheme of 76x18x1 is 4.1, compared to the control with the scheme of 60x12x1 22.2% showed superiority and recorded the highest result.

During the studies, it was 3.7 in the variety "Andijon-35" grown on the basis of the 90x20x1 planting scheme and 19.7% higher than the control with the 90x12x1 scheme, and it was 3.6 in the "Andijon-37" variety grown on the basis of the 60x12x1 planting scheme, compared to the control with the 90x12x1 scheme. 18.9% higher than the control, the degree of fiber maturity of the "Sultan" variety grown in the 90x12x1 planting scheme was 3.6, and it was 16.4% higher than the control with the 80x15x1 scheme.

Cotton fiber length (mm), micron, and relative fiber tensile strength (gk/tex) are often grade-specific characteristics. However, in our research we compared the technological properties of the fiber between the options. In this case, the index of the highest fiber length of the "Sultan" variety grown in the 90x12x1 planting scheme was 33.8 mm, and it was 0.55 mm higher than the control with the 80x15x1 scheme. Also, in the variety "Andijon-37" grown on the basis of the 60x12x1 planting scheme, it was 34.9 mm, 0.30 mm higher than the control with the 60x20x1 scheme, and in the variety "Andijon-35" grown on the basis of the 90x20x1 planting scheme, it was 34.0 mm. 0.50 mm compared to control with 90x12x1 scheme and "Andijon-36" variety grown by film drip irrigation based on 76x18x1 planting scheme, fiber length was 34.6 mm and showed a higher result by 0.25 mm compared to control with 60x12x1 scheme.

In conclusion:

- out of the research options, the index of cotton fiber ripeness of "Andijan-36" cotton variety grown with the help of drip irrigation technology in 76x18x1 planting scheme was 4.1, showing an advantage of 22.2% compared to control with 60x12x1 scheme, and recorded the highest result.

- the index of the highest fiber length of the variety "Sultan" grown in the 90x12x1 planting scheme was 33.8 mm, which was 0.55 mm higher than the control with the 80x15x1 scheme.

From the results of phenological observation of the control and research variants, it can be concluded that the parameters of productivity and early ripening of the variants planted in the open were significantly different compared to the parameters of the variants planted under the film. Cotton varieties grown under film and under film with drip irrigation, despite using a homogeneous seed sample, had a shortened growing season and resulted in early yield elements.

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